

KNOWLEDGE ASSESSMENT

(pre- and post-lecture quiz to assess efficacy of training materials)

1. Why maintain a separation between MSE and HSE?
2. What are the three levels of MSE implementation?
3. How does MSE interact with HSE?
4. What is the key component of assessors?
5. What is the role of controllers in MSE?
6. How are user-defined controllers & supervisors implemented in MSE?
7. What is the role of supervisors in MSE?
8. How do managed watermovers behave?
9. What are the MSE nodes and MSE Water Control Units?
10. How are flood control and water supply needs processed?
11. What do special assessors do?
12. How are special assessors modified?

Answers

1. By creating a **separate MSE** allows for a greater flexibility in the development and implementation of the water resource management rules and policies for managing structure flows.
2. There are three levels of MSE implementation:
 - high level implementation of the region rules and water management policies
 - managed flood control and water supply demands for basins
 - controlled operations of the individual structures.
3. The MSE gets information from the HSE through monitors and assessors, then the MSE implements management rules through controllers.
4. The key components of assessors are the data monitors. The data monitors can monitor any state or dynamic variable as well as perform operations on those values.
5. The controllers are necessary to set the flow for each managed structure. The MSE uses default controllers that **are re defined** by the model and user-defined controllers.
6. The user-defined controllers and supervisors are implemented using standard C++ supervisor programs that contain the necessary logic to set the controllers. These programs can be edited and recompiled to change the management rules.
7. Supervisors control one or more controllers using the information from one or more monitors. Supervisors can be used to implement complex rules or regional rules that are implemented using multiple structures.
8. For managed watermovers, the MSE sets the flow for the structures up to the design flow, or the physically allowable flow for the current conditions.
9. The nodes define the structures controlling the flows to and from the WCU. **The WCU defines the waterbodies included in the WCU**, the inflows and outflows, and the water control elevations.
10. First the flood control assessments are made for each WCU starting at the upstream WCU and working down stream. Then the water supply requirements are evaluated for each WCU beginning with the lowest WCU and working upstream. Finally, the water supply allocations are made working downstream based on the remaining water supply and flood control needs.
11. The special assessors are used to provide complex assessments for the state of the system using various monitors and setting the flow for managed structures similar **to the use of controllers**.

12. Similar to user-defined controllers, special assessors are implemented through standardized, user edited C++ programs.